



The Solutions Network

Rochester, New York

FEMP

Detailed Option A Guidelines

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Detailed Guidelines: What?

- ❖ Addendum to FEMP M&V Guidelines 2.2.
- ❖ Serves as reference and resource for Option A compliant M&V methods.
- ❖ Provides minimum requirements for most Option A methods in Guidelines.
- ❖ Provides recommended 'best practices' for Option A methods.



Detailed Guidelines: Why?

- ❖ 1999 report shows that Option A is most common in SuperESPC.
- ❖ Option A using 100% stipulated values very common.
- ❖ IPMVP 2001 now calls for '...at least one parameter to be measured'.
- ❖ And most importantly...



Detailed Guidelines: Why?

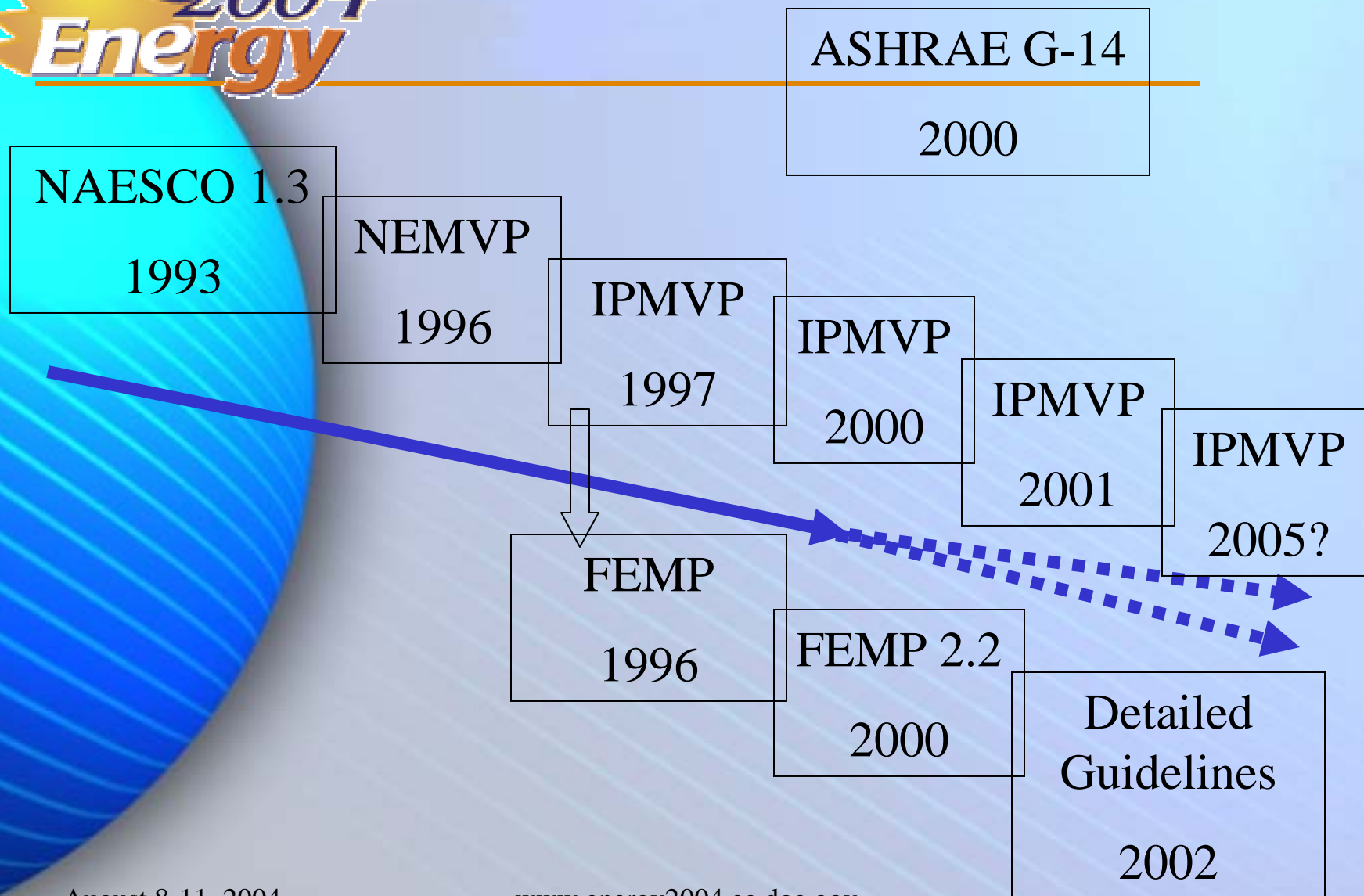
Option A

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Stipulated Savings !!!



Guideline Development



August 8-11, 2004

www.energy2004.ee.doe.gov



IPMVP 2001 vs FEMP 2.2

- ❖ MVP Option A now called “partially measured retrofit isolation”. At least one parameter must be measured.
- ❖ M&V Goal: Minimize uncertainty in the savings estimate.
- ❖ FEMP 2.2 still allows 100% use of stipulations.
- ❖ M&V Goal: Allocate risks & responsibilities to the appropriate party.



IPMVP 2001 vs FEMP 2.2

- ❖ IPMVP defines *generic* procedures that can be used for many different types of performance contracts.
- ❖ FEMP defines *specific* procedures that address risk allocation in ESPC. These risks are:
 - Meeting the savings guarantee.
 - Verifying equipment performance.
 - Minimizing usage risk (to ESCO).



Current Status

- ❖ Detailed Guidelines released 2002.
- ❖ Incorporates 'best practices' by ECM.
- ❖ Statistics and uncertainty discussion added.
- ❖ Available at <http://ateam.lbl.gov/mv/>



Highlights

- ❖ Use of “stipulate” now consistent with IPMVP 2001, e.g.
 - ❖ STIPULATE = NOT MEASURED
- ❖ Guidelines deviate from IPMVP - allows ALL values to be stipulated in certain cases.
- ❖ Standard lighting tables acceptable.



Using the Guidelines

❖ The Guidelines provide

- Appropriate use of stipulations
- Acceptable sources of stipulations
- Minimum M&V activities & reporting
- Where FEMP deviates from IPMVP



Appropriate use of Stipulations

- ❖ Agency willing to accept risk
- ❖ Agency has previous experience
- ❖ Probable success of ECM
- ❖ Small savings and/or small uncertainty
- ❖ Greater M&V costs not justified
- ❖ Stipulations don't add to uncertainty
- ❖ Monitoring serves no other purpose



Inappropriate use of Stipulations

- ❖ Agency unwilling to assume risk
- ❖ Parameters not known with reasonable certainty
- ❖ Potential for technical problems
- ❖ Monitoring provides valuable information
- ❖ Stipulation significantly contributes to overall uncertainty

Sources of Stipulations

Acceptable

- ❖ Engineering analysis
- ❖ Measurement-based models
- ❖ Manufacturer's data
- ❖ Standard tables
- ❖ TMY weather
- ❖ ANSI/ARI/ASHRAE
- ❖ Facility logs

Unacceptable

- ❖ Undocumented assumptions
- ❖ Proprietary algorithms
- ❖ Unsupported handshake agreements
- ❖ Guesses at parameters
- ❖ Models based on questionable data
- ❖ Other buildings



Required Minimum M&V Activities

- ❖ Baseline definition in DES with supporting information.
- ❖ Post-installation report with first-year estimates.
- ❖ Annual M&V verification - "potential to perform."
- ❖ Annual M&V reports.

Measure-Specific Details

Measure Type	FEMP Method	IPMVP Compliant
Lighting Efficiency	LE-A-01	Yes*
	LE-A-02	Yes
Lighting Controls	LC-A-01	Yes*
	LC-A-02	Yes
Constant -Load Motor Efficiency	CLM-A-01	Yes
Variable –Speed- Drive Retrofit	VSD-A-01	Yes
Chiller Replacement	CH-A-01	No
	CH-A-02	Yes
Boiler Replacement	-	Yes
Energy Management & Control System	-	Yes
Water Conservation	WCM-A-01	No
	WCM-A-02	Yes
New Construction	NC-A-01	Yes
Operations & Maintenance	-	N/A
On-Site Generation	-	N/A
Renewable Energy Systems	-	Yes

* By considering lighting tables as measurements.



Example: Lighting

LE-A-01	LE-A-02
<ul style="list-style-type: none">❖ No metering - fixture power based on 'standard tables'.❖ Hours stipulated.❖ Standard tables do shift some risk to Agency.❖ Agency responsible for changes to operating hours.	<ul style="list-style-type: none">❖ Measured fixture power on a sample of fixtures.❖ Hours stipulated.❖ ESCO responsible for performance.❖ Agency responsible for changes to operating hours.

- ❖ No metering - fixture power based on 'standard tables'.

- ❖ Hours stipulated.

- ❖ Standard tables do shift some risk to Agency.

- ❖ Agency responsible for changes to operating hours.

- ❖ Measured fixture power on a sample of fixtures.

- ❖ Hours stipulated.

- ❖ ESCO responsible for performance.

- ❖ Agency responsible for changes to operating hours.



Summary

- ❖ Guidelines move M&V closer to IPMVP compliance while retaining flexibility.
- ❖ Guidelines provide specific recommendations for each ECM.
- ❖ Guidelines promote M&V that satisfies legal intent and enforces guarantees.
- ❖ Guidelines address risk allocation equitably.